[0130] When the color-shift print area was prepared for printing the digital finger tip printing device was used to print the message: DIGITAL SKIN. The thermal print head contact resulted in the apparent disappearance of color on from the printed letter region such that the contrast between the lettering, skin, and background color-shift print area gave rise to a high-resolution printed message directly in the applied skin region.

EXAMPLE

Thermally-Sensitive Digital Color-Shift Printing on Skin

[0131] Color-shifting digital skin printed mediums may also posses thermochromic activity and be printed such that digital skin printed areas may also undergo a subsequent color changes by exposure to temperatures above and below body temperatures. For example, red magenta forms of the printed material can be warmed above body temperatures to reveal a red/orange coloration. Alternatively, the printed medium can be cooled below body temperatures to reveal deep purple-blue colorations.

[0132] Colored/digitally printed regions on skin formed as described (see EXAMPLE: Photo-activated digital color-shift printing medium on skin) were exposed to bath temperatures and running water (greater than 95 degrees F.). The digitally printed region turned an immediate red color from the initial magenta color. Subsequent exposure of the printed skin region to cool water (less than 62 degrees F.) resulted in a color-shift to a blue-purple color.

[0133] Utilization of reversible color-shifting digital skin printing mediums provides for a variety of sequential color changes and cosmetic appeal. Likewise, the digital skin printed region or message can serve to be informative to the person using the medium and associated message.

EXAMPLE

Digitally Augmented Printing on Skin

[0134] Thermal printing process digitally applied directly to skin results in a transient augmentation of the skin surface. Wording, messages, symbols, text, graphics, tattoo art and the like can be formed directly and through digital printing using skin alone as the printing medium or in combination with a color shifting medium. Digital skin printing directly without a color-shift medium was accomplished as using the device as described (see EXAMPLE: Remote digital finger tip printer device). The remote digital finger printing device was programmed to print the wording DIRECT DIGITAL SKTN. A font size of 12 was used in bold. Initially within the first 12 hours, only a slight reddening occurred on the printed region of skin. By 24 hours, the wording DIRECT DIGITAL SKIN began to appear on the skin surface. The lettering became sharper over a 48 hour period. By day 3 after printing, a visible high-resolution scab appeared as the bolded letters. The scab was tinted darker than the surrounding skin regions giving rise to a clear. The darkened printed skin regions appeared as high-resolution lettering printed by a conventional printing method. The lettering did not appear as a scab, but as an attractive print pattern.

[0135] Alternatively, digital skin printing can be accomplished as described in the previous example in combination with a pre-colored color-shift medium. Printing was accomplished as above, but on a color-shift area as described (see EXAMPLE: Photo-activated digital color-shift printing medium on skin). In this case the lettering was initially contrasted by the color-shift in the color-shift medium and then subsequently 24 hours later by washing off the surrounding color-shift medium. After washing, the digitally printed skin region appeared similarly to digital skin printing directly without a color-shift medium described above.

EXAMPLE

Digitally Augmented Cosmetic Skin Alteration

[0136] A cosmetic skin alteration was accomplished using the direct digital skin printing process (see EXAMPLE: Digitally augmented printing on skin). The hand held printer and print head were used to create mild transient tissue alteration on a wrinkled portion of skin. A simple dot pattern using small thermal dot pulses produced by the thermal print head was used to make small thermally induced scare between skin wrinkles. The dots were only marginally visible if examined closely and only for a few days after the printing process was performed. Within one week no scabs or dots were visible by eye and the altered skin region was stretched tight compared with the adjacent wrinkled skin region. Various patterns were applied using increasing and decreasing dot densities and dot orderliness or disorderliness. Digital cosmetic skin alterations were accomplished to maximize resulting skin tightness and visual appeal.

[0137] The printer and digital printing process can be used for a variety of skin alterations including wrinkle reduction, blemish removal or masking, skin pigmentation changes, freckle alterations, birthmark alteration, transient body tattoos and the like.

EXAMPLE

Digitally Adhered Cosmetic Dye Applications

[0138] Cosmetic powders and lotions can be thermally annealed to skin using the remote digital printing process. Initially a cosmetic base is applied directly to skin. The base is formulated to have a melting transition just below that of the thermal temperature achieve in the thermal print head of the remote digital printing device.

[0139] Once the cosmetic base is applied, the region of application is over printed with the remote digital printing device. The cosmetic base becomes thermally melted and adhered to directly to skin at the pixel locations prompted by the thermal printer. Powders containing dyes were spread on skin prior to digital skin printing. Final colorations after printing included a combination of color due the thermal printing process and the adherent dyes used in the applied cosmetic powders.

[0140] Various colored patterns can be achieved on skin depending on the color utilized in the cosmetic base. Digital skin printing can be used to temporarily dye skin in a particular location to create temporary tattoos, hide blemishes, or create or change other characteristics of the skin area being augmented.

[0141] Although the foregoing invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is readily appar-